RESEARCH DEPARTMENT

New transmitting aerial for the Hastings television station

REPORT No. E-095

1963/66

THE BRITISH BROADCASTING CORPORATION
ENGINEERING DIVISION

RESEARCH DEPARTMENT

NEW TRANSMITTING AERIAL FOR THE HASTINGS TELEVISION STATION

Report No. E-095

(1963/66)

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INTRODUCTION

Viewers in the north and north-eastern parts of Hastings would have suffered interference when the effective radiated power (e.r.p.) of the co-channel Folkestone station was increased (see Report No. E-094). To avoid this it was necessary to increase the e.r.p. of both stations simultaneously, and this change was made on 1st August 1963. The required e.r.p. at Hastings was achieved by increasing both the aerial gain and transmitter power.

SUMMARY OF INSTALLATION

Site:	The site is situated in the town of Hastings at Amherst Gardens, grid ref: TQ/806101, height 250 ft (76 m) a.m.s.l.
Support Structure:	The support structure consists of a 94 ft (29 m) square-section self-supporting tower with a 17 ft (5·2 m) cantilever topmast. The tower is oriented with one face on a bearing of 0° ETN.
General Arrangement:	See Fig. 1.
Channel:	Channel 4, with horizontal polarization, is used. Both vision and sound carriers are offset +16·875 kc/s.
Aerial:	The aerial consists of two tiers of crossed dipoles (i.e. a turnstile arrangement) supported on a thin cantilever pole above the main support tower. The inter-tier spacing is 0·65λ and the mean height 105 ft (32 m) a.g.l. There are separate main feeders (RPC2603 cable) to each tier. The dipole orientation and currents are as follows:

Bearing of limb	Current
60° ETN	$1\underline{/0^\circ}$
150° ETN	$1\underline{/45^\circ}$
240° ETN	$1\underline{/180^\circ}$
330° ETN	$1\underline{/225^\circ}$

Power: A translator with an output power of 10 W is used.

Templet and Horizontal Radiation Pattern (h.r.p.): See Fig. 2 and Note.

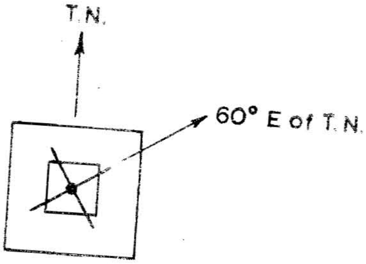
Gain:

Mean intrinsic gain		1·3 dB
Deduct: losses due to possible misalignment and distribution feeders		0·2 dB
Mean net gain		1·1 dB
Deduct: loss in main feeder (type RPC2603)	1·1 dB	
network loss	0·6 dB	1·7 dB
Mean effective gain		-0·6 dB

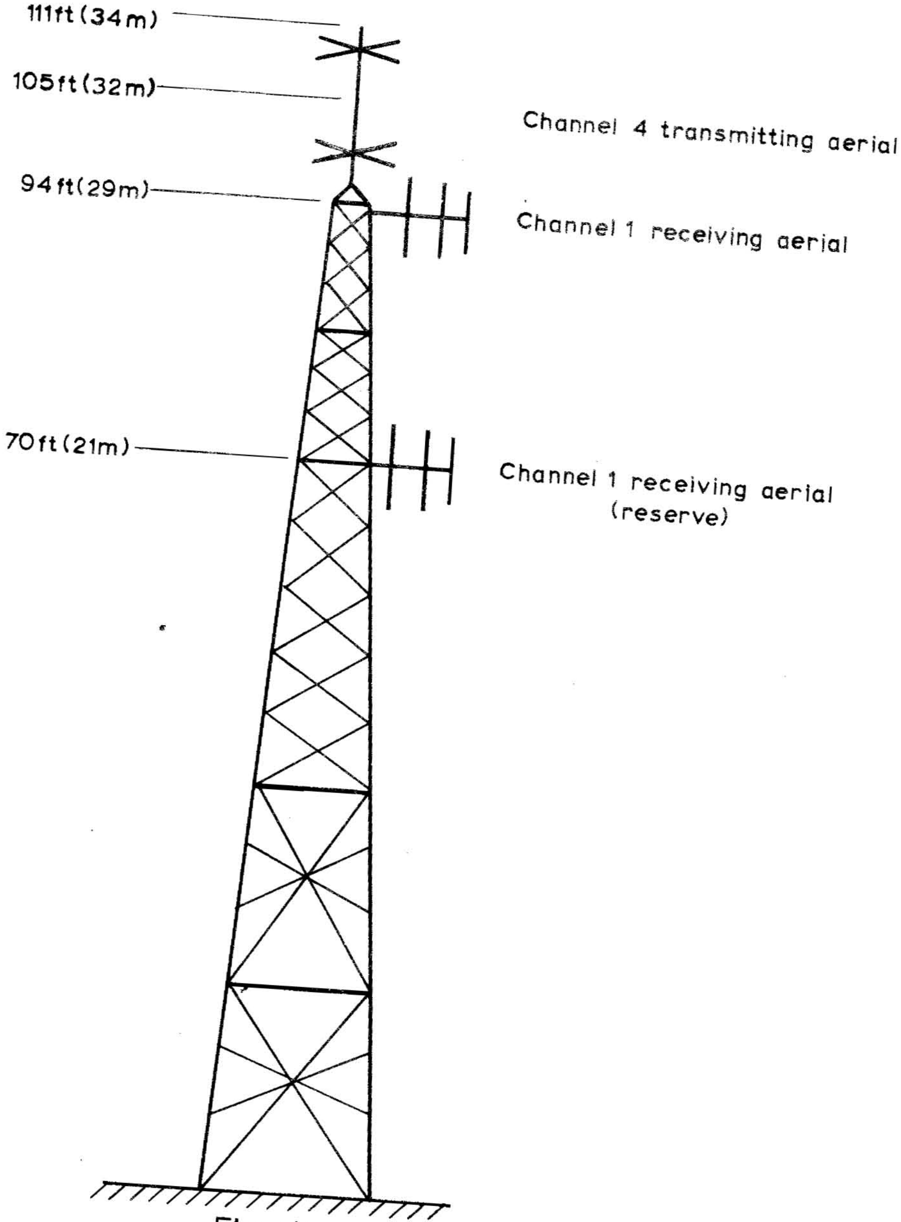
Programme Link: The programme is obtained by direct reception of the Channel 1 (vertical polarization) transmission from Crystal Palace. The receiving aerial consists of a double 3-element Yagi oriented on a bearing of 324° ETN.

Note: This aerial is an existing well-known type for which the h.r.p. may be calculated accurately.

ALG



Plan of transmitting aerial


111ft (34m)
105ft (32m)
94ft (29m)
70ft (21m)
Channel 4 transmitting aerial
Channel 1 receiving aerial
Channel 1 receiving aerial (reserve)

Elevation

Fig. 1 General arrangement of aerials on tower

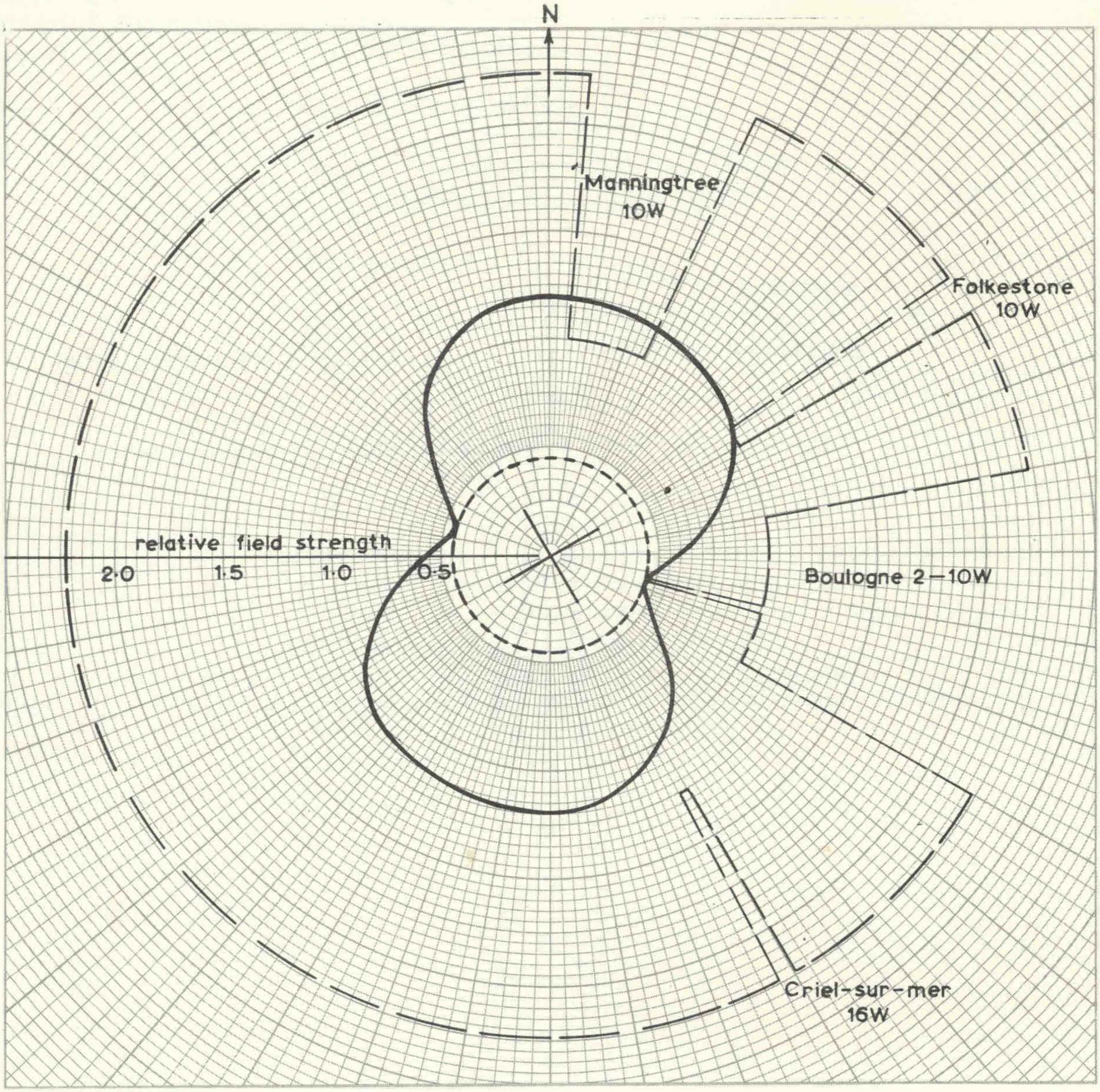


Fig. 2 Templet and horizontal radiation pattern

HORIZONTAL POLARIZATION

Channel 4 (Vision carrier 61·75Mc/s Sound carrier 58·25Mc/s)

Mean effective gain −0·6dB —— —— Maximum permissible E.R.P.
Transmitter power 10W - - - - - - - Original H.R.P.
Mean E.R.P. 8·7W

Unit field corresponds to an E.R.P. of 10W